

Applicants: Jai-Moo YOO et al.  
Serial No.: 10/608,678  
Filed: June 27, 2003  
Page 5

**REMARKS**

Claims 1 and 3-5 were pending in this application. Claims 1 and 3-5 have been amended. Accordingly, claims 1 and 3-5 are presently being examined.

From page 5, paragraph 2 to page 6, paragraph 3 of the Office Action, claims 3-5 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. More specifically, the Office Action stated that: (1) the respective plating solution recited in each of claims 3-5 was unclear; and (2) the respective electroplating process recited in claims 3-5 was unclear.

Applicants hereinabove have amended claims 3-5 to more clearly recite that: (1) as suggested by the Office Action, "the plating solution" of amended claims 3-5 is the plating solution recited in amended claim 1; and (2) the respective electroplating processes of amended claims 3-5, that is, the respective direct current process, pulse current process and periodic reverse current process are the "electroplating process" recited in amended claim 1. Support for these amendments can be found, inter alia, from page 7, line 20 to page 9, line 5 of the present specification.

In view of the amendments to claims 3-5, and the remarks above, applicants respectfully submit that the rejections of claims 3-5 under 35 U.S.C. §112, second paragraph, as being indefinite be reconsidered and withdrawn.

From page 6, paragraph 4 to page 13, paragraph 1 of the Office Action, claims 1 and 3-5 were rejected under 35 U.S.C.

Applicants: Jai-Moo YOO et al.  
Serial No.: 10/608,678  
Filed: June 27, 2003  
Page 6

\$103(a) as being unpatentable over Germany Patent No. DE 101 36 890 to Vogelaere et al. and the English-language equivalent, that is, U.S. Patent Publication No. US 2004/0206630 to Kruger et al. ("Kruger publications") in combination with U.S. Patent No. 6,346,181 to Lee et al. ("Lee patent").

According to the Office Action, each element recited in claim 1 can be found in the Kruger publications except for: (a) the recited plating solution; and (b) the single-crystalline or quasi-single-crystalline orientation. The Office Action also states, with respect to claims 3-5, that the Kruger patent does not disclose the electroplating process being a direct current, pulse current, or periodic reverse current plating process.

However, the Office Action also states that the Lee patent discusses: (a) a plating solution which overlaps ranges of certain components of the plating solution recited in claim 1, and thus, provides a *prima facie* case of obviousness; and (b) three-dimensionally uniform crystal orientations and planes of which the biaxial texture recited in claim 1 is composed, and thus, the biaxial texture would have been obvious to one of ordinary skill in the art at the time of the invention. Further, the Office Action states that the recited texture fraction produced by the respective recited electroplating processes of claims 3-5 would have been obvious to one of ordinary skill in the art since the Lee patent relates to such processes and discusses such a texture fraction as providing an "excellent biaxial texture".

Applicants hereinabove have amended claim 1 to more clearly recite: (1) the step of manufacturing plating solutions which

Applicants: Jai-Moo YOO et al.  
Serial No.: 10/608,678  
Filed: June 27, 2003  
Page 7

have certain optional elements, that is, an amount of an element "or less"; and (2) depositing on, and peeling off, the textured metal layer from a "rotating cylindrical cathode". Support for these amendments can be found, inter alia, on page 12 in lines 7-16, and from page 23, line 9 to page 24, line 7 of the present specification.

Applicants respectfully submit that the manufactured plating solution of the present invention as recited in amended claim 1 differs from the plating solution discussed in the Lee patent. While the plating solution of the Lee patent does have certain elements with overlapping ranges of the plating solution recited in amended claim 1, for example, nickel chloride at an amount of 20-80 g/l and boric acid at an amount of 20-80 g/l, the Lee patent fails to teach or suggest that at least one of these elements of the plating solution can be omitted entirely, that is, "70 g/l or less nickel chloride" (emphasis added). Further, the Lee patent does not discuss the optional inclusion of additional elements such as sodium sulfate in the amount of 10 g/l or less, sodium tungstate in the amount of 10 g/l or less and cobalt chloride in the amount of 10 g/l or less as recited in amended claim 1.

Indeed, the plating solution of the Lee patent is developed for a different purpose from the present invention as recited in amended claim 1, that is, the Lee patent relates to a plating solution suitable for forming a biaxial texture in an electrodeposited layer when a magnetic field is applied to the plating bath:

"For instance, when a plating solution is only under

an electric field, the ions of the solution move only toward the direction of the electric field. Where a magnetic field is further applied to the plating solution which is under an electric field, the motion of the ions is bent toward the magnetic field direction by the Lorentz force." Column 5 at lines 15-20 of the Lee patent.

In contrast, the plating solution of the present invention forms a biaxially textured pure metal or alloy layer having a greater degree of "biaxial orientation ( $\Delta \omega \sim 4^\circ$  and  $\Delta \Phi \sim 5.2^\circ$ )" in comparison to conventional metal layer manufactured using rolling/post-heating as well as the electroplating process of the Lee patent, see page 5, line 11 to page 6, line 2 of the present specification. Thus, for at least this reason, the present invention as recited in amended claim 1 is not taught or suggested by the Kruger publications alone or in combination with the Lee patent.

Further, the present invention as recited in amended claim 1 provides a method of peeling the electroplated biaxially textured metal layer from "a rotating cylindrical cathode". Although the Kruger publications recognize that textured strips may be made by a rolling procedure using strips made from nickel, the Kruger publications only discuss a method of peeling a "textured strip 24a" from the "endless substrate strip 20" of nickel that is attached to the roller, not from the roller itself, see page 2 at paragraph 33 of the English-equivalent of the Kruger publications.

Applicants: Jai-Moo YOO et al.  
Serial No.: 10/608,678  
Filed: June 27, 2003  
Page 9

Therefore, different from the Kruger publications, the present invention as recited in amended claim 1 provides a method to peel the "biaxially textured metal layer" directly off the "rotating cylindrical cathode". Indeed, as stated in the present specification:

"In order to impart a biaxial texture to the metal layer, the surface of the cylindrical cathode 5 is made of a biaxially textured metal material or single crystal. ... The thickness and crystallinity of the biaxially textured metal layer can be varied by controlling the rotational speed of the cylindrical cathode 5, current intensity and the like. The continuous plating process can be widely modified." From page 23, line 18 to page 24, line 7 of the present specification.

Thus, by removing the step of preparing the "endless substrate strip 20" of the Kruger publications, the process of the present invention is simpler and more economical. Thus, for at least this reason applicants respectfully submit that the Kruger publications alone or in combination with the Lee patent fail to teach or suggest the present invention as recited in amended claim 1.

Since claims 3-5 depend directly or indirectly on amended claim 1, and because a claim which depends on another claim is subject to all the limitations of that other claim, applicants respectfully submit that amended claims 3-5 are not unpatentable

Applicants: Jai-Moo YOO et al.  
Serial No.: 10/608,678  
Filed: June 27, 2003  
Page 10

over the Kruger publications alone or in combination with the Lee patent.

In view of the amendments to claims 1 and 3-5 and the remarks above, applicants respectfully request that the rejections of claims 1 and 3-5 as being unpatentable over the Kruger publications in combination with the Lee patent be reconsidered and withdrawn.


In view of the amendments to the claims and the remarks above, applicants respectfully request that the rejections in the Office Action be reconsidered and withdrawn, and earnestly solicit a Notice Of Allowance.

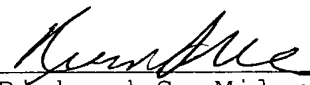
If a telephone conference would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the number provided.

No fees, other than the \$525 fee for the three-month extension of time, are deemed necessary in connection with the filing of this Amendment. However, if any additional fees are required, authorization is hereby given to charge the amount of any such fees to Deposit Account No. 03-3125.

Respectfully submitted,

I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to:  
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